What is claimed is:

1. An anterior cervical plate for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said plate having a length sufficient to span at least two adjacent cervical vertebrae, a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said plate having a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, said plate having at least a first pair of bone screw receiving holes associated with a first of the adjacent cervical vertebrae and at least a second pair of bone screw receiving holes associated with a second of the adjacent cervical vertebrae, said plate having a length longer than its width, wherein said lower surface of said plate has a first concave curvature parallel to said length, said first concave curvature having a radius of curvature between approximately 20 cm to 24 cm.

2. The plate of claim 1 in which said lower surface has a second concave curvature transverse to said length parallel to said width, said second concave curvature having a radius of curvature between approximately 15mm to 20mm.

3. The plate of claim 1 in which said plate has a generally rectangular configuration with lobes extending from at least the corners of said plate and has at least one of said bone

screw receiving holes located within one of said lobes.

4. The plate of claim 1 in which said plate has a length longer than said width.

5. The plate of claim 2 in which said second concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

6. The plate of claim 1 in which said plate has a length sufficient to span at least three consecutive vertebrae.

7. The plate of claim 1 in which said lower surface of said plate has a complex concave curvature configured to mate with the vertebral bodies of the at least two vertebrae, and each bone screw receiving hole has a longitudinal axis that is generally perpendicular to said lower surface at the location of said bone screw receiving hole and each of said bone screw receiving holes is formed to retain a respective bone screw in a position in which the longitudinal axis of said respective bone screw is aligned with the longitudinal axis of said bone screw receiving hole.

8. The plate of claim 1 futher comprising a plurality of bone screws each insertable into a respective one of said bone screw receiving holes in a direction from said upper surface to said lower surface to secure said plate to a vertebra, each of said bone screws retainable in a respective one of said bone screw receiving holes below said upper surface.

9. The plate of claim 8 in which each of said bone screws has a head dimensioned to achieve an interference fit with a respective one of said bone screw receiving holes.

10. The plate of claim 8 in which said bone screws are self-tapping.

11. The plate of claim 8 in which each of said bone screws has a tip remote from said head, a shank which is tapered from said head to said tip, and a thread having a substantially constant crest diameter over substantially the length of said shank.

12. The plate of claim 11 in which said thread of each of said bone screws has a thin profile and a sharp crest.

13. The plate of claim 8 in which said bone screws are convergent.

14. The plate of claim 1 in which at least a portion of said lower surface comprises a bone ingrowth material.

15. The plate of claim 1 in which at least a portion of said lower surface comprises a bone growth material.

16. The plate of claim 1 in which at least a portion of said plate is coated with a material to induce the formation of bone.

17. The plate of claim 1 in which said plate comprises bone morphogenetic protein.

18. The plate of claim 1 in which at least a portion

of said plate is made of a material which is resorbable.

19. The plate of claim 18 in which said resorbable material is polygyconate.

20. The plate of claim 19 in which said resorbable material is impregnated with a fusion promoting substance.

21. The plate of claim 1 in which at least a portion of said lower surface is textured so as to promote bone ingrowth.

22. The plate of claim 21 in which said textured portion is impregnated with a fusion promoting substance.

23. The plate of claim 1 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

24. The plate of claim 1 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

25. The plate of claim 1 in which said plate includes an aperture proximate at least one of said bone screw receiving holes.

26. The plate of claim 25 in which said aperture comprises a slot along the longitudinal axis of said plate.

27. The plate of claim 1 in which at least at one end of said plate includes means for engaging a compression tool.

28. The plate of claim 27 in which said engaging means comprises a recess.

29. The plate of claim 28 in which said engaging means comprises a depression in said at least one end of said plate.

30. An anterior cervical plate for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said plate having a length sufficient to span at least two adjacent cervical vertebrae, a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said plate having a plurality of paired bone screw receiving holes extending through said plate from said upper surface to said lower surface, each pair of said bone screw receiving holes being adapted to be placed in the same vertebra, said plate having a length longer than its width, wherein said lower surface of said plate has a concave radius of curvature parallel to its width in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle to each other in the range of approximately 15 degrees to 30 degrees.

31. The plate of claim 30 in which at least one of said pairs of bone screw receiving holes form an included angle of approximately 20 degrees.

32. The plate of claim 30 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of less than approximately 29 degrees and greater than 21

degrees.

33. The plate of claim 30 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

34. The plate of claim 30 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

35. The plate of claim 30 in which each bone screw receiving hole is generally perpendicular to said lower surface of said plate.

36. The plate of claim 30 in which said increased upper portion of said bone screw receiving holes has a threaded portion.

37. The plate of claim 30 further comprising a thread on the interior of one of said bone screw receiving holes.

38. The plate of claim 30 in which at least one of said bone screw receiving holes has means for preventing a bone screw from passing entirely through said one of bone screw receiving holes.

39. The plate of claim 30 in which at least one of said bone screw receiving holes has an upper diameter portion and a smaller lower diameter portion to prevent a bone screw being

placed in said one of bone screw receiving holes from passing entirely through said one of bone screw receiving holes.

40. The plate of claim 30 in which at least a portion of said lower surface comprises a bone growth material.

41. The plate of claim 30 in which at least a portion of said plate is coated with a material to induce the formation of bone.

42. The plate of claim 30 in which said plate comprises bone morphogenetic protein.

43. The plate of claim 30 in which at least a portion of said plate is made of a material which is resorbable.

44. The plate of claim 43 in which said resorbable material is polygyconate.

45. The plate of claim 44 in which said resorbable material is impregnated with a fusion promoting substance.

46. The plate of claim 30 in which at least a portion of said lower surface is textured so as to promote bone growth.

47. The plate of claim 46 in which said textured portion is impregnated with a fusion promoting substance.

48. The plate of claim 30 in which at least a portion of said lower surface comprises a time released bone growth material.

49. The plate of claim 30 in which at least a portion of said lower surface is roughened to promote the growth of bone

along said lower surface.

50. The plate of claim 30 in which said plate includes an aperture between said first end and said second end proximate at least one of said bone screw receiving holes.

51. The plate of claim 50 in which said aperture comprises a slot along the longitudinal axis of said plate.

52. The plate of claim 30 in which at least at one end of said plate includes means for engaging a compression tool.

53. The plate of claim 52 in which said engaging means comprises a recess.

54. The plate of claim 52 in which said engaging means comprises a depression in said at least one end of said plate.

55. An anterior cervical plate for engaging a human cervical spine along the anterior aspect of the spine, said plate having a first end, a second end, and a length sufficient to span at least three adjacent cervical vertebrae, said plate having a lower surface for contacting the adjacent cervical vertebrae and an upper surface opposite to said lower surface, said plate having at least a first pair of bone screw receiving holes associated with a first of the adjacent cervical vertebrae and at least a second pair of bone screw receiving holes associated with a second of the adjacent cervical vertebrae, said plate having at least one transverse pair of intermediate bone screw receiving holes associated with a cervical vertebrae intermediate the first

and second of the adjacent cervical vertebrae, each of said bone screw receiving holes extending through said plate from said upper surface to said lower surface, and said plate having an aperture there through between said first and second pairs of bone screw receiving holes, said aperture being associated with the intermediate cervical vertebrae.

56. The plate of claim 55 in which said plate has a length longer than said width, and said lower surface has a concave curvature parallel to said length, said concave curvature having a radius of curvature greater than 15 cm and less than 25 cm.

57. The plate of claim 55 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

58. The plate of claim 57 in which said first concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

59. The plate of claim 55 in which said lower surface of said plate has a complex concave curvature configured to mate with the vertebral bodies of the at least two vertebrae, and each bone screw receiving hole has a longitudinal axis that is generally perpendicular to said lower surface at the location of said bone screw receiving hole and each of said bone screw receiving holes is formed to retain a respective bone screw in a

position in which the longitudinal axis of said respective bone screw is aligned with the longitudinal axis of said bone screw receiving hole.

60. The plate of claim 55 in which said plate has a generally rectangular configuration with lobes extending from at least the corners of said plate and has at least one of said bone screw receiving holes located within one of said lobes.

61. The plate of claim 55 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

62. The plate of claim 55 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

63. The plate of claim 55 in which at least a portion of said lower surface comprises a bone growth material.

64. The plate of claim 55 in which at least a portion of said lower surface comprises a bone ingrowth material.

65. The plate of claim 55 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

66. The plate of claim 55 in which at least a portion of said lower surface comprises a bone growth material.

67. The plate of claim 55 in which at least a portion of said plate is coated with a material to induce the formation of bone.

68. The plate of claim 55 in which said plate comprises bone morphogenetic protein.

69. The plate of claim 55 in which at least a portion of said plate is made of a material which is resorbable.

70. The plate of claim 69 in which said resorbable material is polygyconate.

71. The plate of claim 69 in which said resorbable material is impregnated with a fusion promoting substance.

72. The plate of claim 55 in which at least a portion of said lower surface is textured so as to promote bone ingrowth.

73. The plate of claim 72 in which said textured portion is impregnated with a fusion promoting substance.

74. The plate of claim 55 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

75. The plate of claim 55 in which at least a portion of said lower surface is roughened to induce the formation of bone along at least a portion of said lower surface.

76. The plate of claim 55 in which said aperture comprises a slot along the longitudinal axis of said plate.

77. The plate of claim 55 in which at least at one

end of said plate includes means for engaging a compression tool.

78. The plate of claim 77 in which said engaging means comprises a recess.

79. An anterior cervical plate for engaging a human cervical spine along the anterior aspect of the spine, said plate having a length sufficient to span at least two adjacent cervical vertebrae, said plate having a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said plate having at least a first pair of bone screw receiving holes associated with a first of two adjacent cervical vertebrae and at least a second pair of bone screw receiving holes associated with a second of the two adjacent vertebrae, said bone screw receiving holes extending through said plate from said upper surface to said lower surface, and at least one end of said plate including a recess for engaging a compression tool.

80. The plate of claim 79 in which said engaging means comprises a recess.

81. The plate of claim 79 in which said plate includes an aperture along a transverse line intermediate said first and said second pairs of bone screw receiving holes.

82. The plate of claim 79 wherein said plate has a length longer than said width, and said lower surface has a concave curvature parallel to said length, said concave curvature having a radius of curvature greater than 15 mm and less than 25

cm.

83. The plate of claim 79 in which said plate has a generally rectangular configuration with lobes extending from at least the corners of said plate and has at least one of said bone screw receiving holes located within one of said lobes.

84. The plate of claim 79 in which said plate has a length longer than said width, and said lower surface has a concave curvature parallel to said width.

85. The plate of claim 84 in which said concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

86. The plate of claim 79 in which said plate has a length sufficient to span at least three consecutive vertebrae.

87. The plate of claim 79 in which said lower surface of said plate has a complex concave curvature configured to mate with the vertebral bodies of the at least two vertebrae, and each bone screw receiving hole has a longitudinal axis that is generally perpendicular to said lower surface at the location of said bone screw receiving hole and each of said bone screw receiving holes is formed to retain a respective bone screw in a position in which the longitudinal axis of said respective bone screw is aligned with the longitudinal axis of said bone screw receiving hole.

88. The plate of claim 79 in which the central

longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of approximately 20 degrees to 30 degrees.

89. The plate of claim 79 in which the central longitudinal axes of the bone screw receiving holes of said pairs of bone screw receiving holes form an included angle of greater than 30 degrees.

90. The plate of claim 79 further comprising at least one bone screw receiving hole associated with a cervical vertebrae intermediate the first and second of the adjacent vertebrae.

91. The plate of claim 79 wherein at least a portion of said lower surface comprises a bone ingrowth material.

92. The plate of claim 79 in which at least a portion of said lower surface comprises a bone growth material.

93. The plate of claim 79 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

94. The plate of claim 79 in which at least a portion of said plate is coated with a material to induce the formation of bone.

95. The plate of claim 79 in which said plate comprises bone morphogenetic protein.

96. The plate of claim 79 in which at least a portion

of said plate is made of a material which is resorbable.

97. The plate of claim 96 in which said resorbable material is polyglyconate.

98. The plate of claim 96 in which said resorbable material is impregnated with a fusion promoting substance.

99. The plate of claim 79 in which at least a portion of said lower surface is textured so as to promote bone ingrowth.

100. The plate of claim 99 in which said textured portion is impregnated with a fusion promoting substance.

101. The plate of claim 79 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

102. An anterior cervical plate for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said plate having a length sufficient to span at least two adjacent cervical vertebrae, a lower surface for contacting the adjacent cervical vertebrae and an upper surface opposite to said lower surface, said plate having a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least a first of said bone screw receiving holes being associated with a first of the adjacent cervical vertebrae and at least a second of said bone screw receiving holes being associated with a second of the adjacent cervical vertebrae, at least one of said bone screw

receiving holes having a recess associated with and partially offset therefrom, and a locking element associated with said recess having a head, said locking element capable of being pre-installed to said plate prior to insertion of a bone screw into said at least one bone screw hole, said locking element being movable from a first position to a second position, said head being configured so as to permit insertion of bone screws into said bone screw receiving hole associated with said recess when in said first position and so as to cover at least a portion of a bone screw inserted in said bone screw receiving hole associated with said recess when said locking element is in said second position.

103. The plate of claim 102 in which said locking element has a bearing surface for bearing against a portion of a bone screw when said locking element is in said second position.

104. The plate of claim 102 in which said locking element has at least one camming surface.

105. The plate of claim 102 in which said locking element has at least one ramped surface.

106. The plate of claim 102 in which said recess has a threaded portion.

107. The plate of claim 106 in which said locking element comprises a threaded member.

108. The plate of claim 106 in which said locking

element has a camming surface.

109. The plate of claim 106 in which said locking element has a ramped surface.

110. The plate of claim 106 in which said locking element comprises a screw having a head portion and a threaded shaft.

111. The plate of claim 106 in which said head has a camming surface.

112. The plate of claim 106 in which said head has a ramped portion surface.

113. The plate of claim 102 in which said locking element comprises a rivet.

114. The plate of claim 113 in which said rivet has a camming surface.

115. The plate of claim 113 in which said rivet has a ramped surface.

116. The plate of claim 102 in which said recess has at least one camming surface for cooperation with said locking element.

117. The plate of claim 116 in which said locking element has a camming surface.

118. The plate of claim 102 in which said removed segment is arcuate and has the same or greater radius of curvature than the corresponding bone screw receiving hole.

119. The plate of claim 102 further comprising an opening in the side wall of said bone screw receiving hole in communication with the side wall of said recess, said locking element having a projection to fit within said opening so as to cover a portion of said bone screw receiving hole when said locking element is moved from said first position to said second position.

120. The plate of claim 119 in which said projection has a ramped surface.

121. The plate of claim 102 in which said locking element is permanently attached to said plate.

122. The plate of claim 102 in which said head has at least one segment removed therefrom.

123. The plate of claim 102 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

124. The plate of claim 123 in which said first concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

125. The plate of claim 102 in which said lower surface of said plate has a second concave curvature parallel to said length.

126. The plate of claim 125 wherein said second concave curvature has a radius of curvature greater than 15 cm

and less than 25 cm.

127. The plate of claim 102 in which said plate has a generally rectangular configuration with lobes extending from at least the corners of said plate and has at least one of said bone screw receiving holes located within the circumference of at one of said lobes.

128. The plate of claim 102 in which said plate has a length sufficient to span at least three consecutive vertebrae.

129. The plate of claim 102 in which the central axes of said bone screw receiving holes are perpendicular to said lower surface of said plate.

130. The plate of claim 102 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

131. The plate of claim 102 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

132. The plate of claim 102 in which at least one of said bone screw receiving holes has means for preventing a bone screw from passing entirely through said one of bone screw receiving holes.

133. The plate of claim 102 in which at least one of

said bone screw receiving holes has an upper diameter portion and a smaller lower diameter portion to prevent a bone screw being placed in said one of bone screw receiving holes from passing entirely through said one of bone screw receiving holes.

134. The plate of claim 102 in which at least a portion of said lower surface comprises a bone ingrowth material.

135. The plate of claim 102 in which at least a portion of said lower surface comprises a bone growth material.

136. The plate of claim 102 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

137. The plate of claim 102 in which at least a portion of said plate is coated with a material to induce the formation of bone.

138. The plate of claim 102 in which said plate comprises bone morphogenetic protein.

139. The plate of claim 102 in which at least a portion of said plate is made of a material which is resorbable.

140. The plate of claim 139 in which said resorbable material is polygyconate.

141. The plate of claim 139 in which said resorbable material is impregnated with a fusion promoting substance.

142. The plate of claim 102 in which at least a portion of said lower surface is textured so as to promote bone ingrowth.

143. The plate of claim 142 in which said textured portion is impregnated with a fusion promoting substance.

144. The plate of claim 102 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

145. The plate of claim 102 in which at least one end of said plate has a means for removably engaging a compression tool.

146. The plate of claim 145 in which said engaging means comprises a depression in said at least one end of said plate.

147. An anterior cervical plate system for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said system comprising:

a plate having a length sufficient to span at least two adjacent cervical vertebrae, said plate having a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said plate having a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least one of said bone screw receiving holes being associated with a first of the adjacent vertebrae and at least a second of said bone screw receiving holes being associated with a second of the adjacent vertebrae, said bone screw receiving holes each having an offset

recess for receiving a locking element;

a plurality of bone screws each insertable into a respective one of said bone screw receiving holes in a direction from said upper surface to said lower surface to secure said plate to a vertebra, each of said bone screws retainable in a respective one of said bone screw receiving holes; and

a plurality of locking elements each engageable in a respective one of said offset recesses associated with said bone screw receiving holes, said plurality of locking elements each being configured to lock one of said bone screws to said plate by covering at least a portion of one of said bone screw receiving holes below said upper surface.

148. The plate system of claim 147 in which said locking element has a bearing surface for bearing against a portion of a bone screw when said locking element is in said second position.

149. The plate system of claim 147 in which said locking element has a camming surface.

150. The plate system of claim 147 in which said locking element has a ramped surface.

151. The plate system of claim 147 in which said recess has a threaded portion.

152. The plate system of claim 151 in which said locking element comprises a threaded portion.

153. The plate system of claim 152 in which said locking element has a camming surface.

154. The plate system of claim 152 in which said locking element has a ramped surface.

155. The plate system of claim 151 in which said locking element comprises a screw having a head portion and a threaded shaft.

156. The plate system of claim 155 in which said screw has a camming surface.

157. The plate system of claim 155 in which said screw has a ramped surface.

158. The plate system of claim 147 in which said locking element comprises a rivet.

159. The plate system of claim 158 in which said rivet has a camming surface.

160. The plate system of claim 158 in which said rivet has a ramped surface.

161. The plate system of claim 147 in which said recess has at least one camming surface for cooperation with said locking element.

162. The plate system of claim 161 in which said locking element has a camming surface.

163. The plate system of claim 147 in which said locking element has a removed segment that is arcuate and has the

same or greater radius of curvature than the corresponding bone screw receiving hole.

164. The plate system of claim 147 further comprising an opening in the side wall of one of said bone screw receiving hole in communication with the side wall of said recess, said locking element having a projection adapted to fit within said side wall opening so as to cover a portion of said one of said bone screw receiving hole when said locking element is moved from a first position to a second position.

165. The plate system of claim 164 in which said projection has a ramped surface.

166. The plate system of claim 147 in which said locking element is permanently attached to said plate.

167. The plate system of claim 147 in which at least one end of said plate has a means for removably engaging a compression tool.

168. The plate system of claim 167 in which said engaging means comprises a depression in said at least one end of said plate.

169. The plate system of claim 147 in which said recess for receiving a locking element comprises a thread on the interior of at least one of said bone screw receiving holes.

170. The plate system of claim 147 in which said locking element covers at least a portion said bone screw

receiving hole when placed in said recess.

171. The plate system of claim 147 in which said plate has a width and length longer than said width, and said lower surface has a first concave curvature parallel to said width.

172. The plate system of claim 171 in which said first concave curvature has a radius of curvature of the order of approximately 16-21 mm.

173. The plate system of claim 171 in which said lower surface of said plate has a second concave curvature parallel to said length.

174. The plate system of claim 173 in which said second concave curvature has a radius of curvature greater than 15 cm and less than 25 cm.

175. The plate system of claim 147 in which said plate has a generally rectangular configuration, has lobes extending from at least the corners of said plate, and has at least one of said bone screw receiving holes located within the circumference of said lobes.

176. The plate system of claim 147 in which said plate has a length sufficient to span at least three consecutive vertebrae.

177. The plate system of claim 147 in which the central axes of said bone screw receiving holes are perpendicular to said lower surface of said plate.

178. The plate system of claim 147 in which each of said bone screws have a head dimensioned to achieve an interference fit with a respective one of said bone screw receiving holes.

179. The plate system of claim 147 in which said bone screw and said locking element have heads with means for engaging a tool for rotating said bone screws and said locking element.

180. The plate system of claim 147 in which each of said bone screws has a head and a first irregular depression in the top of said head, and said locking element has a head portion and a second irregular depression in said head, both of said first and second depressions having the same cross section.

181. The plate system of claim 147 in which each of said bone screws are self-tapping.

182. The plate system of claim 147 in which each of said bone screws has a tip remote from said head, a shank which is tapered from said head to said tip, and a thread having a substantially constant crest diameter over substantially the length of said shank.

183. The plate system of claim 182 in which said thread of each of said bone screws has a thin profile and a sharp crest.

184. The plate system of claim 147 in which said bone screws and said locking element do not project above the upper

surface of said plate when said plate is installed.

185. The plate system of claim 147 in which at least one of said bone screw receiving holes has means for preventing a bone screw from passing through said bone screw receiving hole.

186. The plate system of claim 147 in which each of said bone screw receiving holes has an upper diameter portion and a smaller lower diameter portion to prevent a bone screw being placed in said bone screw receiving hole from passing through said bone screw receiving hole.

187. The plate system of claim 147 in which at least a portion of said lower surface comprises a bone growth material.

188. The plate system of claim 147 in which at least a portion of said plate is coated with a material to induce the formation of bone.

189. The plate system of claim 147 in which said plate comprises bone morphogenetic protein.

190. The plate system of claim 147 in which at least a portion of said plate is made of a material which is resorbable.

191. The plate system of claim 190 in which said resorbable material is polygyconate.

192. The plate system of claim 190 in which said resorbable material is impregnated with a fusion promoting substance.

193. The plate system of claim 147 in which at least a

portion of said lower surface is textured so as to induce bone ingrowth.

194. The plate system of claim 193 in which said textured portion is impregnated with a fusion promoting substance.

195. The plate system of claim 147 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

196. The plate system of claim 147 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

197. The plate system of claim 147 in which at least one end of said plate has means for removably engaging the first end of a compression tool.

198. The plate system of claim 197 in which said engaging means comprises a depression in said at least one end of said plate.

199. The plate system of claim 197 in which said opening comprises a longitudinal slot along the longitudinal axis of said plate.

200. An anterior cervical plate for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said plate having a length sufficient to span at least two adjacent cervical vertebrae, a lower surface for

contacting the cervical vertebrae, and an upper surface opposite to said lower surface; a plurality of bone screw receiving holes associated with at least a first and a second of the adjacent vertebrae, said plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least one of said plurality of bone screw receiving holes having a reduced diameter lower portion and an increased diameter upper portion proximate said upper surface; and a locking element engageable in said increased diameter upper portion of one of said bone screw receiving holes to lock one of said bone screws to said plate, said locking element adapted to bear against one of said bone screws when in one of said bone screw receiving holes.

201. The plate of claim 200 in which said locking element is coaxially engageable to one of said bone screw receiving holes.

202. The plate of claim 200 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

203. The plate of claim 202 in which said first concave curvature has a radius of curvature in the order of approximately 16-21 mm.

204. The plate of claim 200 in which said lower surface of said plate has a second concave curvature parallel to said

length.

205. The plate of claim 204 in which said second concave curvature has a radius of curvature greater than approximately 15 cm and less than approximately 25 cm.

206. The plate of claim 200 in which said plate has a generally rectangular configuration with lobes extending from at least the corners of said plate and has at least one of said bone screw receiving holes located within the circumference of said lobes.

207. The plate of claim 200 in which said lower surface of said plate has a complex concave curvature configured to mate with the vertebral bodies of the at least two vertebrae, and each bone screw receiving hole has a longitudinal axis that is generally perpendicular to said lower surface at the location of said bone screw receiving hole and each of said bone screw receiving holes is formed to retain a respective bone screw in a position in which the longitudinal axis of said respective bone screw is aligned with the longitudinal axis of said bone screw receiving hole.

208. The plate of claim 200 in which said increased upper portion of said bone screw receiving holes has a threaded portion.

209. The plate of claim 200 further comprising a thread on the interior of one of said bone screw receiving hole.

210. The plate of claim 200 in which at least one of said bone screw receiving holes has means for preventing a bone screw from passing entirely through said one of bone screw receiving holes.

211. The plate of claim 200 in which at least one of said bone screw receiving holes has an upper diameter portion and a smaller lower diameter portion to prevent a bone screw being placed in said one of bone screw receiving holes from passing entirely through said one of bone screw receiving holes.

212. The plate of claim 200 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

213. The plate of claim 200 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

214. The plate of claim 200 in which said locking element comprises a cap.

215. The plate of claim 200 in which said locking element covers at least a portion of one of said bone screw receiving holes.

216. The plate of claim 200 in which each of said bone screws have a head dimensioned to achieve an interference fit

with a respective one of said bone screw receiving holes.

217. The plate of claim 200 in which said bone screws and said locking element each have a head with means for engagement by the same tool for rotating said bone screw and said locking element.

218. The plate of claim 200 in which each of said bone screws has a head with an irregular depression in the top of said head and said locking element has a head portion with an irregular depression, both of said depressions having the same cross sectional area.

219. The plate of claim 200 in which each of said bone screws is a self-tapping screw.

220. The plate of claim 200 in which each of said bone screws has a tip remote from said head, a shank which is tapered from said head to said tip, and a thread having a substantially constant crest diameter over most of the length of said shank.

221. The plate of claim 220 in which said thread of each of said bone screws has a thin profile and a sharp crest.

222. The plate of claim 200 in which said bone screws and said locking element do not project above the upper surface of said plate when said plate is installed.

223. The plate of claim 200 in which the central axes of said bone screw receiving holes are perpendicular to said lower surface of said plate.

235. The plate of claim 200 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

236. The plate of claim 200 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

237. The plate of claim 200 in which said plate includes an aperture between said first end and said second end proximate at least one of said bone screw receiving holes.

238. The plate of claim 237 in which said aperture comprises a slot along the longitudinal axis of said plate.

239. The plate of claim 200 in which at least one end of said plate has means for removably engaging the first end of a compression tool.

240. The plate of claim 239 in which said engaging means comprises a depression in said at least one end of said plate.

241. An anterior cervical plate system for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said system comprising:

a plate having a length sufficient to span at least two adjacent cervical vertebrae, a lower surface for contacting the adjacent cervical vertebrae, and an upper surface opposite to said lower surface;

224. The plate of claim 200 in which said plate has a length sufficient to span at least three consecutive cervical vertebrae.

225. The plate of claim 200 in which said bone screws are convergent.

226. The plate of claim 200 in which at least a portion of said lower surface comprises a bone growth material.

227. The plate of claim 200 in which at least a portion of said lower surface comprises a bone ingrowth material.

228. The plate of claim 200 in which at least a portion of said plate is coated with a material to induce the formation of bone.

229. The plate of claim 200 in which said plate comprises bone morphogenetic protein.

230. The plate of claim 200 in which at least a portion of said plate is made of a material which is resorbable.

231. The plate of claim 200 in which said resorbable material is polygyconate.

232. The plate of claim 230 in which said resorbable material is impregnated with a fusion promoting substance.

233. The plate of claim 200 in which at least a portion of said lower surface is textured so as to induce bone ingrowth.

234. The plate of claim 233 in which said textured portion is impregnated with a fusion promoting substance.

a plurality of bone screw receiving holes associated with at least a first and a second of the adjacent cervical vertebrae, said plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least one of said plurality of bone screw receiving holes having a reduced diameter lower portion and an increased diameter upper portion proximate said upper surface;

a plurality of bone screws each having a longitudinal axis for insertion into a respective one of said plurality of bone screw receiving holes in a direction from said upper surface to said lower surface and having a head for engaging said plate below said upper surface to secure said plate to a vertebra; and

a locking element engageable in said increased diameter upper portion of one of said bone screw receiving holes to lock one of said bone screws to said plate.

242. The plate system of claim 241 in which said recess has a threaded portion.

243. The plate system of claim 241 in which said locking element comprises a cap.

244. The plate system of claim 241 in which said locking element covers at least a portion of one of said bone screw receiving holes.

245. The plate system of claim 241 in which said locking element is coaxially engageable to one of said bone screw

receiving holes.

246. The plate system of claim 241 in which said plate has a length sufficient to span at least three consecutive cervical vertebrae.

247. The plate system of claim 245 in which said plate includes an aperture between said first end and said second end proximate at least one of said bone screw receiving holes.

248. The plate system of claim 247 in which said aperture comprises a slot along the longitudinal axis of said plate.

249. The plate system of claim 241 in which said plate has a length longer than said width, and said lower surface has a concave curvature parallel to said width.

250. The plate system of claim 249 in which said concave curvature has a radius of curvature in the order of approximately about 16-21 mm.

251. The plate system of claim 241 in which said lower surface of said plate has a concave curvature parallel to said length.

252. The plate system of claim 251 in which said concave curvature has a radius of curvature approximately 15 cm and less than approximately 25 cm.

253. The plate system of claim 241 in which said plate has a generally rectangular configuration with lobes extending

from at least the corners of said plate and has at least one of said bone screw receiving holes located within the circumference of said lobes.

254. The plate system of claim 241 in which said lower surface of said plate has a complex concave curvature configured to mate with the vertebral bodies of the at least two vertebrae, and each bone screw receiving hole has a longitudinal axis that is generally perpendicular to said lower surface at the location of said bone screw receiving hole and each of said bone screw receiving holes is formed to retain a respective bone screw in a position in which the longitudinal axis of said respective bone screw is aligned with the longitudinal axis of said bone screw receiving hole.

255. The plate system of claim 241 in which each of said bone screws have a head dimensioned to achieve an interference fit with a respective one of said bone screw receiving holes.

256. The plate system of claim 241 in which said bone screws and said locking element each have a head with means for engagement by the same tool for rotating said bone screw and said locking element.

257. The plate system of claim 241 in which each of said bone screws has a head with an irregular depression in the top of said head and said locking element has a head portion with

an irregular depression, both of said depressions having the same cross sectional area.

258. The plate system of claim 241 in which each of said bone screws is a self-tapping screw.

259. The plate system of claim 241 in which each of said bone screws has a tip remote from said head, a shank which is tapered from said head to said tip, and a thread having a substantially constant crest diameter over most of the length of said shank.

260. The plate system of claim 259 in which said thread of each of said bone screws has a thin profile and a sharp crest.

261. The plate system of claim 241 in which said bone screws are convergent.

262. The plate system of claim 241 in which said bone screws and said locking element do not project above the upper surface of said plate when said plate is installed.

263. The plate system of claim 241 in which said increased diameter upper portion for retaining a locking element comprises a thread on the interior of one of said bone screw receiving hole.

264. The plate system of claim 241 in which at least one of said bone screw receiving holes has means for preventing a bone screw from passing entirely through said one of bone screw

receiving holes.

265. The plate system of claim 241 in which at least one of said bone screw receiving holes has an upper diameter portion and a smaller lower diameter portion to prevent a bone screw being placed in said one of bone screw receiving holes from passing entirely through said one of bone screw receiving holes.

266. The plate system of claim 241 in which the central axes of said bone screw receiving holes are perpendicular to said lower surface of said plate.

267. The plate system of claim 241 in which at least a portion of said lower surface comprises a bone ingrowth material.

268. The plate system of claim 241 in which at least a portion of said lower surface comprises a bone growth material.

269. The plate system of claim 241 in which at least a portion of said plate is coated with a material to induce the formation of bone.

270. The plate system of claim 241 in which said plate comprises bone morphogenetic protein.

271. The plate system of claim 241 in which at least a portion of said plate is made of a material which is resorbable.

272. The plate system of claim 271 in which said resorbable material is polygyconate.

273. The plate system of claim 271 in which said resorbable material is impregnated with a fusion promoting

substance.

274. The plate system of claim 241 in which at least a portion of said lower surface is textured so as to induce bone ingrowth.

275. The plate system of claim 274 in which said textured portion is impregnated with a fusion promoting substance.

276. The plate system of claim 241 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

277. The plate of claim 241 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

278. The plate system of claim 241 in which said plate includes an aperture between said first end and said second end proximate at least one of said bone screw receiving holes.

279. The plate system of claim 278 in which said aperture comprises a slot along the longitudinal axis of said plate.

280. The plate system of claim 241 in which at least one end of said plate has means for removably engaging the first end of a compression tool.

281. The plate system of claim 280 in which said engaging means comprises a depression in said at least one end of

said plate.

282. An anterior cervical plate system for engaging at least three vertebrae of a human cervical spine along the anterior aspect of the spine, said device comprising:

a plate having a generally rectangular configuration with a first end, a second end, sides, and a length sufficient to span at least two adjacent cervical vertebrae, said plate having:

rounded lobes at each corner of said generally rectangular configuration and having rounded lobes on said sides between said first and second ends;

a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface;

a bi-concave curvature for conforming to the anterior aspect of the cervical spine in lordosis, said bi-concave curvature having a longitudinal concave curvature along the longitudinal axis of said plate and a transverse concave curvature along the transverse axis of said plate;

a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface and having a reduced diameter portion near said lower surface, a respective one of said plurality of bone screw receiving holes located at each of said rounded lobes such that said plate has a first pair of said bone screw receiving holes located at said first end of said plate

corresponding to a first of the adjacent vertebrae, a second pair of said bone screw receiving holes corresponding to a second of the adjacent vertebrae, and a third pair of said bone screw receiving holes corresponding to a third of the adjacent vertebrae; and

a plurality of locking elements for locking a bone screw placed in said bone screw receiving holes, each of said plurality of locking elements coaxially engageable in a respective one of said bone screw receiving holes to lock a bone screw to said plate, each of said locking elements having a bottom surface and a top surface with a depression for engaging a tool used to lock and unlock said locking element to said plate, said bottom surface configured to fit over the bone screw and bear against the bone screw.

283. The plate system of claim 282 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

284. The plate system of claim 282 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

285. The plate system of claim 282 in which said plate has a length longer than said width, and said lower surface has

concave curvature parallel to said length, said concave curvature having a radius of curvature greater than 15 cm and less than 25 cm.

286. The plate system of claim 282 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

287. The plate system of claim 282 in which said first concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

288. The plate system of claim 287 in which said lower surface of said plate has a second concave curvature parallel to said length.

289. The plate system of claim 288 wherein said second concave curvature has a radius of curvature greater than 15 cm and less than 25 cm.

290. The plate system of claim 282 in which said locking element comprises a cap.

291. An anterior cervical plating system for engaging at least three vertebrae of a human cervical spine along the anterior aspect of the spine, said device comprising:

a plate having a generally rectangular configuration with a first end, a second end, sides, and a length sufficient to span at least two adjacent cervical vertebrae, said plate having:

rounded lobes at each corner of said generally

rectangular configuration and having rounded lobes on said sides between said first and second ends;

a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface;

a bi-concave curvature for conforming to the anterior aspect of the cervical spine in lordosis, said bi-concave curvature having a longitudinal concave curvature along the longitudinal axis of said plate and a transverse concave curvature along the transverse axis of said plate;

a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface and having a reduced diameter portion near said lower surface, a respective one of said plurality of bone screw receiving holes located at each of said rounded lobes such that said plate has a first pair of said bone screw receiving holes located at said first end of said plate corresponding to a first of the adjacent vertebrae, a second pair of said bone screw receiving holes corresponding to a second of the adjacent vertebrae, and a third pair of bone screw receiving holes corresponding to a third of the adjacent vertebrae, each of said bone screw receiving holes having an offset recess for receiving a locking element; and

a plurality of locking elements for locking a bone screw placed in said bone screw receiving hole, each of said

plurality of locking elements engageable in a respective one of said offset recesses to lock a bone screw to said plate, each of said locking elements having a bottom surface and a top surface with a depression for engaging a tool used to lock and unlock said locking element to said plate, said bottom surface configured to fit over the bone screw and bear against the bone screw.

292. The plate system of claim 291 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

293. The plate system of claim 291 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

294. The plate system of claim 291 in which said plate has a length longer than said width, and said lower surface has concave curvature parallel to said length, said concave curvature having a radius of curvature greater than 15 cm and less than 25 cm.

295. The plate system of claim 291 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

296. The plate system of claim 295 in which said first

concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

297. The plate system of claim 296 in which said lower surface of said plate has a second concave curvature parallel to said length.

298. The plate system of claim 297 wherein said second concave curvature has a radius of curvature greater than 15 cm and less than 25 cm.

299. An anterior cervical plate for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said plate having a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said plate having a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least a first and second of said bone screw receiving holes being associated with a first of the cervical vertebrae, and a recess associated with said at least first and second of said bone screw receiving holes, said recess having a configuration for retaining a locking element for locking at least two bone screws in said at least first and second bone screw receiving holes, the central longitudinal axis of said recess being offset from a transverse line passing through the central longitudinal axes of said first and second bone screw receiving holes.

300. The plate of claim 299 further comprising at least a third bone screw receiving hole corresponding to the area between the first and second cervical vertebrae, and said recess being associated with said first and second bone screw receiving holes and with said third bone screw receiving hole.

301. The plate of claim 300 in which said recess overlaps a portion of said first bone screw receiving hole and said third bone screw receiving hole.

302. The plate of claim 299 in which said recess overlaps a portion of at least four bone screw receiving holes.

303. The plate of claim 299 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

304. The plate of claim 303 in which said first concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

305. The plate of claim 299 in which said lower surface of said plate has a second concave curvature parallel to said length.

306. The plate of claim 305 wherein said second concave curvature has a radius of curvature greater than 15 cm and less than 25 cm.

307. The plate of claim 299 in which said plate has a length sufficient to span at least three consecutive vertebrae.

308. The plate of claim 299 in which said lower surface of said plate has a complex concave curvature configured to mate with the vertebral bodies of the at least two vertebrae, and each bone screw receiving hole has a longitudinal axis that is generally perpendicular to said lower surface at the location of said bone screw receiving hole and each of said bone screw receiving holes is formed to retain a respective bone screw in a position in which the longitudinal axis of said respective bone screw is aligned with the longitudinal axis of said bone screw receiving hole.

309. The plate of claim 299 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

310. The plate of claim 299 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

311. The plate of claim 299 in which at least a portion of said lower surface comprises a bone growth material.

312. The plate of claim 299 in which at least a portion of said lower surface comprises a bone ingrowth material.

313. The plate of claim 299 in which at least a portion of said plate is coated with a material to induce the formation

of bone.

314. The plate of claim 299 in which said plate comprises bone morphogenetic protein.

315. The plate of claim 299 in which at least a portion of said plate is made of a material which is resorbable.

316. The plate of claim 315 in which said resorbable material is polygyconate.

317. The plate of claim 315 in which said resorbable material is impregnated with a fusion promoting substance.

318. The plate of claim 299 in which at least a portion of said lower surface is textured so as to promote bone ingrowth.

319. The plate of claim 318 in which said textured portion is impregnated with a fusion promoting substance.

320. The plate of claim 299 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

321. The plate of claim 299 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

322. The plate of claim 299 in which said aperture comprises a slot along the longitudinal axis of said plate.

323. The plate of claim 299 in which at least at one end of said plate includes means for engaging a compression tool.

324. The plate of claim 323 in which said engaging

means comprises a recess.

325. The plate of claim 323 in which said engaging means comprises a depression in said at least one end of said plate.

326. An anterior cervical plate for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said plate having a length sufficient to span at least two adjacent cervical vertebrae, said plate having a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said plate having a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least a first and second of said bone screw receiving holes being associated with a first of the cervical vertebrae, and a recess for retaining a locking element for locking bone screws in said bone screw receiving holes, said recess having a central longitudinal axis offset from a transverse line passing through the central longitudinal axes of said first and second bone screw receiving holes, and a locking element movably engageable in said recess being movable from at least a first position to a second position, said locking element being configured so as to permit insertion of bone screws into each of said first and second bone screw receiving holes when in said first position, and said head bearing against at least a portion of at least one of said bone

screws in said first and second bone screw receiving holes when moved to said second position.

327. The plate of claim 326 in which said locking element has a bearing surface for bearing against a bone screw.

328. The plate of claim 326 in which said locking element has a camming surface.

329. The plate of claim 326 in which said locking element has a ramped surface.

330. The plate of claim 326 in which said recess has a threaded portion.

331. The plate of claim 330 in which said locking element comprises a threaded portion.

332. The plate of claim 330 in which said locking element has a camming surface.

333. The plate of claim 330 in which said locking element has a ramped surface.

334. The plate of claim 330 in which said locking element comprises a screw having a head portion and a threaded shaft.

335. The plate of claim 330 in which said locking element has a camming surface.

336. The plate of claim 330 in which said locking element has a ramped surface.

337. The plate of claim 326 in which said locking

element comprises a rivet.

338. The plate of claim 337 in which said rivet has a camming surface.

339. The plate of claim 337 in which said rivet has a ramped surface.

340. The plate of claim 326 in which said recess has at least one camming surface for cooperation with said locking element.

341. The plate of claim 326 in which said head has at least one segment removed therefrom.

342. The plate of claim 341 in which said removed segment has the same or greater radius of curvature as the corresponding bone screw receiving holes.

343. The plate of claim 326 further comprising an opening in the side wall of said bone screw receiving holes in communication with the side wall of said recess, said locking element having a plurality of projections to fit within said side wall openings so as to cover a portion of said bone screw receiving hole when said locking element is moved from said first position to said second position.

344. The plate of claim 343 in which said projections have a ramped surface.

345. The plate of claim 326 in which said locking element is permanently attached to said plate.

346. The plate of claim 326 in which said locking element has at least three segments removed therefrom, each of said at least three segments corresponding to a different bone screw receiving hole whereby movement of said locking element from said first position to said second position causes said locking element to bear against at least a portion of the bone screws in said three bone screw receiving holes.

347. The plate of claim 326 in which said locking element has at least four segments removed, each of said at least four segments corresponding to a different bone screw receiving hole whereby movement of said locking element from said first position to said second position causes said locking element to bear against at least a portion of the bone screws in said four bone screw receiving holes.

348. The plate of claim 326 in which said locking element covers at least a portion said bone screw receiving hole when placed in said recess.

349. The plate of claim 326 in which said locking element covers at least a portion of one of said bone screw receiving holes.

350. The plate of claim 326 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

351. The plate of claim 350 in which said first

concave curvature has a radius of curvature of the order of approximately 16-21 mm.

352. The plate of claim 326 in which said lower surface of said plate has a second concave curvature parallel to said length.

353. The plate of claim 352 in which said second concave curvature has a radius of curvature greater than approximately 15 cm and less than approximately 25 cm.

354. The plate of claim 326 in which said plate has a generally rectangular configuration with lobes extending from at least the corners of said plate and has at least one of said bone screw receiving holes located within the circumference of said lobes.

355. The plate of claim 326 in which said plate has a length sufficient to span at least three consecutive vertebrae.

356. The plate of claim 326 in which the central axes of said bone screw receiving holes are perpendicular to said lower surface of said plate.

357. The plate of claim 326 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

358. The plate of claim 326 in which the central longitudinal axes of the bone screw receiving holes of at least

one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

359. The plate of claim 326 in which at least a portion of said lower surface comprises a bone ingrowth material.

360. The plate of claim 326 in which at least a portion of said lower surface comprises a bone growth material.

361. The plate of claim 326 in which at least a portion of said plate is coated with a material to induce the formation of bone.

362. The plate of claim 326 in which said plate comprises bone morphogenetic protein.

363. The plate of claim 326 in which at least a portion of said plate is made of a material which is resorbable.

364. The plate of claim 363 in which said resorbable material is polygyconate.

365. The plate of claim 363 in which said resorbable material is impregnated with a fusion promoting substance.

366. The plate of claim 326 in which at least a portion of said lower surface is textured so as to promote bone ingrowth.

367. The plate of claim 366 in which said textured portion is impregnated with a fusion promoting substance.

368. The plate of claim 326 in which at least a portion of said lower surface comprises a time released bone growth inducing material.

369. The plate of claim 326 in which at least a portion of said lower surface is roughened to promote the growth of bone along said lower surface.

370. The plate of claim 326 in which at least one end of said plate has means for removably engaging a compression tool.

371. The plate of claim 370 in which said engaging means comprises a depression at least one end of said plate.

372. The plate of claim 326 in which said plate includes an opening proximate said second bone screw receiving holes associated with said second adjacent vertebrae.

373. The plate of claim 372 in which said opening comprises a slot along the longitudinal axis of said plate.

374. An anterior cervical plate for engaging at least two vertebrae of a human cervical spine along the anterior aspect of the spine, said device comprising:

a plate having a first end, a second end, and a length sufficient to span at least two adjacent cervical vertebrae, said plate having a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said plate having a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least a first and second of said bone screw receiving holes being associated with a first of the adjacent

vertebrae, and a recess for retaining a locking element for locking bone screws in said bone screw receiving holes, said recess having a central longitudinal axis offset from a transverse line passing through the central longitudinal axes of said first and second bone screw receiving holes, and a locking element movably engageable in said recess having a head and being movable from at least a first position to a second position, said head having a configuration so as to permit insertion of bone screws into said first and said second bone screw receiving holes when in said first position, and said head bearing against a portion of the bone screws inserted into said first and said second bone screw receiving holes when moved to said second position; and

a plurality of bone screws each having a longitudinal axis and insertable into a respective one of said bone screw receiving holes in a direction from said upper surface to said lower surface to secure said plate to a vertebra.

375. The plate of claim 374 in which said locking element has a bearing surface for bearing against a bone screw.

376. The plate of claim 374 in which said locking element has a camming surface.

377. The plate of claim 374 in which said locking element has a ramped surface.

378. The plate of claim 374 in which said recess has a

threaded portion.

379. The plate of claim 378 in which said locking element comprises a threaded portion.

380. The plate of claim 378 in which said locking element has a camming surface.

381. The plate of claim 374 in which said locking element has a ramped surface.

382. The plate of claim 378 in which said locking element has a head portion and a threaded shaft.

383. The plate of claim 382 in which said locking element has a camming surface.

384. The plate of claim 382 in which said locking element has a ramped portion surface.

385. The plate of claim 382 in which said locking element is a rivet.

386. The plate of claim 385 in which said rivet has a camming surface.

387. The plate of claim 385 in which said rivet has a ramped surface.

388. The plate of claim 374 in which said recess has at least one camming surface for cooperation with said locking element.

389. The plate of claim 374 in which said locking element has at least two segments removed therefrom, said removed

segments being arcuate and have the same or greater radius of curvature than a corresponding bone screw receiving holes.

390. The plate of claim 374 further comprising an opening in the side wall of said bone screw receiving holes in communication with the side wall of said recess, said locking element having a plurality of projections to fit within said side wall openings so as to cover a portion of said first, second, and intermediate bone screw receiving holes when said locking element is moved from its first position to its second position.

391. The plate of claim 390 in which said projections have a ramped surface.

392. The plate of claim 374 in which said locking element is permanently attached to said plate.

393. The plate of claim 374 in which said locking element has at least three segments removed therefrom, each of said at least three segments corresponding to a different bone screw receiving hole whereby movement of said locking element from said first position to said second position causes said locking element to cover at least a portion of three bone screw receiving holes.

394. The plate of claim 374 in which said locking element has at least four segments removed therefrom, each of said at least four segments corresponding to a different bone screw receiving hole whereby movement of said locking element

from said first position to said second position causes said locking element to cover at least a portion of four bone screw receiving holes.

395. The plate of claim 374 in which said locking element covers at least one of said bone screw receiving holes.

396. The plate of claim 374 wherein said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

397. The plate of claim 396 wherein said first concave curvature has a first radius of curvature of approximately about 16-21 mm.

398. The plate of claim 397 wherein said lower surface of said plate has a second concave curvature parallel to said length.

399. The plate of claim 398 wherein said second concave curvature has a radius of curvature greater than approximately 15 cm and less than approximately 25 cm.

400. The plate of claim 374 in which said plate has a generally rectangular configuration, has lobes extending from at least the corners of said plate, and has at least one of said bone screw receiving holes are located within the circumference of said lobes.

401. The plate of claim 374 in which said plate has a length sufficient to span at least three consecutive vertebrae.

402. The plate of claim 374 in which the central axes of said bone screw receiving holes are perpendicular to said lower surface of said plate.

403. The plate of claim 374 further comprising a plurality of bone screws each having a head dimensioned to achieve an interference fit with a respective one of said bone screw receiving holes.

404. The plate of claim 403 in which said bone screw and said locking element have heads with means for engagement by the same tool for rotating said bone screw and said locking element.

405. The plate of claim 403 in which said bone screw has a first head with an irregular depression in the top of said first head for engagement with a screwdriver; and said locking element has a second head with an irregular depression in said second head for engagement with a screwdriver, whereby both said first and said second heads may be engaged by the same screwdriver.

406. The plate of claim 403 in which each of said bone screws is a self-tapping screw.

407. The plate of claim 403 in which each of said bone screws has a tip remote from said head, a shank which is tapered from said head to said tip, and a thread having a substantially constant crest diameter over substantially the length of said

shank.

408. The plate of claim 407 in which said thread of each of said bone screws has a thin profile and a sharp crest.

409. The plate of claim 403 in which said bone screws and said locking element do not project above the upper surface of said plate when said plate is installed.

410. The plate of claim 374 in which said recess includes a thread on the interior of said bone screw receiving hole.

411. The plate of claim 374 in which said bone screw receiving hole has means for preventing a bone screw from passing through said bone screw receiving hole.

412. The plate of claim 374 in which said bone screw receiving hole has an upper diameter portion and a smaller lower diameter portion to prevent a bone screw being placed in said bone screw receiving hole from passing through said bone screw receiving hole.

413. The plate of claim 374 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

414. The plate of claim 374 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included

angle greater than 20 degrees and less than 30 degrees.

415. The plate of claim 374 wherein at least a portion of said lower surface comprises a bone ingrowth material.

416. The plate of claim 374 in which at least a portion of said lower surface comprises a bone growth material.

417. The plate of claim 374 in which at least a portion of said plate is made of a material which is resorbable.

418. The plate of claim 417 in which said resorbable material is polygyconate.

419. The plate of claim 417 in which said resorbable material is impregnated with a fusion promoting substance.

420. The plate of claim 374 in which at least a portion of said lower surface is textured.

421. The plate of claim 420 in which said textured portion is impregnated with a fusion promoting substance.

422. The plate of claim 374 in which at least a portion of said lower surface comprises a time released bone growth material.

423. The plate of claim 374 in which at least one of said ends of said plate has means for removably engaging a compression tool.

424. The plate of claim 423 in which said engaging means comprises a depression in said at least one end of said plate.

425. The plate of claim 374 in which said plate includes an opening proximate said second bone screw receiving hole associated with said second adjacent vertebrae.

426. The plate of claim 425 in which said opening comprises a slot along the longitudinal axis of said plate.

427. An anterior cervical plating system for engaging at least three vertebrae of a human cervical spine along the anterior aspect of the spine, said device comprising:

a plate having a generally rectangular configuration with a first end, a second end, sides, and a length sufficient to span at least two adjacent cervical vertebrae, said plate having:

rounded lobes at each corner of said generally rectangular configuration and having rounded lobes on said sides between said first and second ends;

a lower surface for contacting the cervical vertebrae and an upper surface opposite to said lower surface;

a bi-concave curvature for conforming to the anterior aspect of the cervical spine in lordosis, said bi-concave curvature having a longitudinal concave curvature along the longitudinal axis of said plate and a transverse concave curvature along the transverse axis of said plate;

a plurality of bone screw receiving holes extending through said plate from said upper surface to said lower surface, a respective one of said plurality of bone screw

receiving holes located at each of said rounded lobes such that said plate has a first pair of said bone screw receiving holes located at said first end of said plate and corresponding to a first of the adjacent vertebrae, a second pair of said bone screw receiving holes corresponding to a second of the adjacent vertebrae, and a third pair of said bone screw receiving holes corresponding to a third of the adjacent vertebrae;

a locking element receiving opening positioned between said first pair of bone screw receiving holes, said locking element receiving opening surrounded by a recess in said plate concentric with said locking element receiving opening, and overlapping a portion of said first pair of bone screw receiving holes, said recess having a central longitudinal axis offset from a transverse line passing through the central longitudinal axes of said first pair of bone screw receiving holes;

a locking element positioned in said locking element receiving opening and having a head positionable within said recess, said head having a top surface with a depression for engaging a tool used to lock and unlock said locking element to said plate, said head being configured so as to permit insertion of bone screws into said bone screw receiving holes when in a first unlocked position and to bear against at least a portion of

the bone screw in said bone screw receiving holes when moved to a second locked position.

428. The plate system of claim 427 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle of greater than 14 degrees and less than 30 degrees.

429. The plate system of claim 427 in which the central longitudinal axes of the bone screw receiving holes of at least one of said pairs of bone screw receiving holes form an included angle greater than 20 degrees and less than 30 degrees.

430. The plate system of claim 427 in which said plate has a length longer than said width, and said lower surface has concave curvature parallel to said length, said concave curvature having a radius of curvature greater than 15 cm and less than 25 cm.

431. The plate system of claim 427 in which said plate has a length longer than said width, and said lower surface has a first concave curvature parallel to said width.

432. The plate system of claim 431 in which said first concave curvature has a radius of curvature in the order of approximately 16 to 21 mm.

433. The plate system of claim 432 in which said lower surface of said plate has a second concave curvature parallel to said length.

434. The plate system of claim 433 wherein said second concave curvature has a radius of curvature greater than 15 cm and less than 25 cm.

435. A method for joining adjacent vertebrae of the anterior cervical spine together with a plating system composed of a plate having a plurality of bone screw receiving holes and a plurality of bone screws each securable in a vertebra through a respective one of the bone screw receiving holes, said method comprising the steps of:

forming a pilot hole in a vertebra by driving a sharp-ended tool into the bone of the vertebra to create a pilot hole whereby the bone material displaced by said sharp-ended tool is driven into the vertebrae and not substantially removed; and

inserting a bone screw into the pilot hole through the respective bone screw receiving hole of the plate to attach the plate to the vertebrae.

436. The method of claim 435 in which said pilot hole forming step includes th sub-step of driving said sharp-ended tool to a final depth which is short of the posterior cortex of the vertebra.

437. The method of claim 436 further comprising the step of positioning the plate on the vertebra, and said step of forming the pilot hole includes the sub-step of driving the sharp-ended tool through a bone screw receiving hole in the

plate.

438. The method of claim 437 further comprising the step of engageably aligning said sharp-ended tool to a bone screw receiving hole in the plate.

439. The method of claim 437 in which the inserting step includes the sub-step of screwing a bone screw into the pilot hole through the bone screw receiving holes of the plate.

440 . The method of claim 439 in which the inserting step includes utilizing a self-tapping screw.

441. The method of claim 440 further comprising the step of locking the bone screw to the plate after the bone screw is screwed into said vertebrae.

442. The method of claim 435 in which the forming step includes the sub-step of utilizing a sharp ended tool contained within a housing and said housing is attached to said plate prior to being driven into said vertebrae.

443. The method of claim 442 in which the forming step includes the sub-step of driving said sharp ended tool into said vertebrae coaxial with the bone screw receiving holes of the plate.

444. The method of claim 435 further comprising the step of rotating said sharp-ended tool.

445. A method for joining at least two adjacent cervical vertebrae together anteriorly with a plating system

comprising a plate having a length sufficient for contacting the two adjacent cervical vertebrae and having a plurality of bone screw receiving holes and a plurality of bone screws each securable in a respective vertebra through a respective one of the bone screw receiving holes, said method comprising the steps of:

positioning said plate so as to align at least a transverse pair of the bone screw receiving holes with each of the adjacent vertebrae;

attaching said plate to a first of at least one of the two adjacent vertebrae;

compressing the space between two adjacent vertebrae; and

attaching the plate to the second of the two vertebrae.

446. The method of claim 445 in which the compressing step includes:

securing an engaging post to a second vertebrae;

applying the first arm of a compression tool having a first arm and a second arm and means for moving said first and said second arm towards one another to said engaging post and said second arm to a portion of said plate attached to the first of the vertebrae; and

applying a compression force to the space between said two adjacent vertebrae by moving said first arm towards said

second arm.

447. The method of claim 446 in which said engaging post is a sharpened rod and said sharpened rod is secured to the second adjacent vertebrae by embedding the sharpened rod into the second vertebrae to a depth less than the depth of the body of the second vertebrae.

448. The method of claim 446 in which said vertebral body engaging post is driven to a final depth which is short of the posterior cortex of the respective vertebra.

449. The method of claim 446 in which the engaging post is installed through an opening in the plate intermediate the ends of the plate and alignable with the second vertebrae.

450. The method of claim 446 in which the compression tool is attached to the vertebral body engaging post and to the plate.

451. A method for compressing two adjacent vertebral bodies with a plate comprising the steps of:

engaging the plate with a first arm of a compression tool;

engaging the spine with a vertebral body penetrating member affixed to a second arm of said compression apparatus; and

utilizing said compression apparatus to shorten the distance between said first and second arms.

452. The method of claim 451 in which said plate

engaging step includes the substeps of:

engaging said first arm over a first vertebral body where said plate has been firmly attached to the first vertebral body with a pair of bone screws;

engaging said second arm over a second vertebral body; and

securing said plate to said second vertebral body with at least one bone screw following said step of shortening the distance between said first and second arms of said compression tool.

453. Apparatus for compressing a spinal disc space disposed between two adjacent vertebrae of a cervical spine, comprising:

a body;

a first arm having a first end and a second end, said first arm fixedly attached at its first end to said body;

a second arm having a first end and a second end, said second arm movably attached at its first end to said body;

means for imparting relative movement to said first and said second arms toward one another to create a compression force between said first and second arms; and

means for preventing movement of said second arm away from said first arm, said preventing means associated with said body and said second arm.

454. The apparatus of claim 453 in which the second end of at least one of said first and second arms has an opening for removably receiving an engagement device.

455. The apparatus of claim 454 in which said engaging device comprises a sharp peg.

456. The apparatus of claim 454 in which said engaging device comprises a hook.

457. The apparatus of claim 454 in which said engaging device is movable in a rotational manner and extendible along the axis of said arms.

458. The apparatus of claim 453 in which said preventing means comprises of a ratcheted member, and said imparting means for moving said arm comprises a gear associated with said second arm connected to a handle whereby rotation of said handle in a first direction moves said first arm toward said second arm.

459. The apparatus of claim 454 including a self-locking and release assembly, said self-locking and release assembly engaging said ratcheted member to prevent movement of said first and said second arms away from one another while in a first position and whereby said self-locking assembly may be disengaged from said ratchetings to a second position by operation of said release mechanism connected to said self-locking assembly.

460. A pilot hole forming apparatus for creating a pilot hole in a cervical vertebral body comprising: a hollow tubular member having a top end and a lower end configured to cooperatively engage a bone screw receiving hole in a cervical plate, a rod having a sharpened-end movable within said tubular member between an upper position whereby said sharpened-end does not project beyond the lower end of said tubular member and a lower position wherein said sharpened-end projects below said lower end of said tubular member, said rod having an upper portion that extends above the upper end of said tubular member, whereby applying a force coaxial to said rod force to said upper portion of said rod drives the sharpened-end of said rod out of said tubular member, said sharpened-end having sufficient length to pass through the cervical plate and into the vertebral body to a predetermined depth less than the depth of the vertebral body.

461. The apparatus of claim 460 further comprising means for engaging the plate.

462. The apparatus of claim 460 in which said lower end of said hollow tubular member has a reduced diameter portion.

463. The apparatus of claim 462 in which said reduced diameter portion is threaded.

464. The apparatus of claim 460 in which top end of said upper end of said rod has an increased diameter portion capable of being hit by a hammer for driving the sharpened-end of

the rod into the vertebral body.

465. The apparatus of claim 460 including means for restricting the distance that said rod can extend out of said lower end of said tubular member.

466. The apparatus of claim 465 for use in the human adult cervical spine in which the distance that the rod can extend out of said lower end of said hollow tubular member is less than the depth of the vertebrae with which it is to be used.

467. The apparatus of claim 466 in which said hollow tubular member is configured to cooperatively engage a bone screw receiving hole of a spinal plate so as to form a pilot hole coaxial to the central longitudinal axis of the bone screw receiving hole.

468. The apparatus of claim 460 in which the sharpened-end of said rod has surface edges to facilitate moving bone when said rod is rotated.

469. The apparatus of claim 460 in which said sharpened-end extends from said tubular member a length of 8-20 mm.

470. The apparatus of claim 460 in which said sharpened-end has a major diameter of 2 mm.

471. A bone screw for use in attaching medical devices to the anterior aspect cervical spine vertebrae, said screw comprising a head, a shaft attached to said head and terminating

at a tip, said shaft having a thread, said shaft having a varying root diameter from proximately below said head to proximately above said tip, the outer diameter of said thread being substantially uniformly equal from proximately below said head to proximately above said tip, said thread having a thin profile and a sharp crest, said head having a transverse cross sectional dimension greater than the transverse cross sectional dimension of said shaft, and further comprising a recess for coupling to a driver instrument.

472. The bone screw of claim 471 in which said tip is sharp.

473. The bone screw of claim 471 in which said root of said shaft has an arcuate shape.

474. The bone screw of claim 471 in which said thread is of a lesser diameter at said tip than above said tip.

475. The bone screw of claim 473 in which said arcuate portion of said shaft has an increasing radius of curvature from said tip towards said head.

476. The bone screw of claim 471 in which said bone screw has a head, and said head has a convex top surface.

477. The bone screw of claim 471 in which said head has a flat portion.

478. The bone screw of claim 471 in which said head has a first upper diameter section and a smaller lower diameter

section.

479. The bone screw of claim 471 in which said head has engagement means for engagement with a screw driving tool.

480. The bone screw of claim 479 in which said engagement means is an irregular recess.

481. The bone screw of claim 471 in which said bone screw is at least in part made of a resorbable material.

482. The bone screw of claim 471 having a length of approximately 10-22 mm.

483. The bone screw of claim 482 having a thread pitch of 1.5-2.0 mm.

484. The bone screw of claim 471 in which the outer diameter of the threads in 4-5 mm.

485. A bone screw for use in human spinal surgery, said screw having a head portion, a threaded shank portion, and a tip, said threaded shank portion having a length from about 10 mm to about 22 mm and a head length from about 1 mm to about 3 mm, said threaded shank portion having a maximum outside diameter from about 3.6 mm to about 5.2 mm and said head having a diameter from about 3.8 mm to about 7.0 mm, said screw having a thread pitch from about 1.25 mm to about 2.5 mm and a sharp and thin threaded profile wherein the apex of the two faces of the thread have an angle of less than 21 degrees and the base of said thread is less than 0.5 mm thick and said screw has a root diameter that

increases from proximately above said tip along the longitudinal axis to proximately below the head portion of said screw and said thread outer diameter being generally constant from below said head portion to said tip portion.

486. The bone screw of claim 485 in which said fluting interrupts at least the most distant two thread turns at said tip.

487. The bone screw of claim 485 in which said screw has a tapered tip and at least the first thread of said tip has a diameter less than the diameter of the other screw threads.

488. The bone screw of claim 485 in which said bone screw is made of a resorbable material.

489. The bone screw of claim 485 being made of a metal suitable for human implantation.

490. The bone screw of claim 485 in which said tip being fluted by at least one cut out section so as to make said screw self-tapping.

491. A bone screw locking element for use in association with an anterior cervical plating system, said locking element comprising a member having a head, said head having a width and at least two segments removed from said head for the width of said head.

492. The bone screw locking element of claim 491 in which said member is a screw having a threaded shaft.

493. The bone screw locking element of claim 492 in which said member has a camming surface on the bottom of said head.

494. The bone screw locking element of claim 492 in which said member has a ramped surface on the bottom of said head.

495. The bone screw locking element of claim 491 in which said member comprises a rivet having a top segment and a bottom segment connected by a reduced diameter segment.

496. The bone screw locking element of claim 495 in which said rivet has a camming surface on the bottom surface of said top segment.

497. The bone screw locking element of claim 495 in which said rivet has a camming surface on the top surface of said bottom segment.

498. The bone screw locking element of claim 495 in which said rivet has a ramped surface on the bottom surface of said top segment.

499. The bone screw locking element of claim 495 in which said rivet has a ramped surface on the top surface of said bottom segment.

500. The bone screw locking element of claim 491 in which said member comprises a threaded member.

501. The bone screw locking element of claim 491 in

which said head has a camming surface.

502. The bone screw locking element of claim 491 in which said head has a ramped surface.

503. The bone screw locking element of claim 491 in which said member has at least one projection extending from said head.

504. The bone screw locking element of claim 491 in which said head has at least three removed segments.

505. The bone screw locking element of claim 491 in which said head has at least four removed segments.

506. The bone screw locking element of claim 491 in which at least a portion of said head is flexible.

507. The bone screw locking element of claim 491 in which said heads has at least one slot for providing flexibility to at least a portion of said head.

508. The bone screw locking element of claim 491 in which said removed segments are arcuate.

509. A bone screw locking element for use in association with an anterior cervical plating system comprising a member having a head, said head having a width and at least a portion of said head being flexible.

510. The bone screw locking element of claim 509 in which said head has at least one slot for providing flexibility to at least a portion of said head.

511. The bone screw locking element of claim 509 in which said member is a screw having a threaded shaft.

512. The bone screw locking element of claim 511 in which said member has a camming surface on the bottom of said head.

513. The bone screw locking element of claim 511 in which said member has a ramped surface on the bottom of said head.

514. The bone screw locking element of claim 509 in which member comprises a rivet having a top segment and a bottom segment connected by a reduced diameter segment.

515. The bone screw locking element of claim 514 in which said rivet has a camming surface on the bottom surface of said top segment.

516. The bone screw locking element of claim 514 in which said rivet has a camming surface on the top surface of said bottom segment.

517. The bone screw locking element of claim 514 in which said rivet has a ramped surface on the bottom surface of said top segment.

518. The bone screw locking element of claim 514 in which said rivet has a ramped surface on the top surface of said bottom segment.

519. The bone screw locking element of claim 509 in

which said member comprises a set screw.

520. The bone screw locking element of claim 514 in which said set screw has a camming surface.

521. The bone screw locking element of claim 509 in which said set screw has a ramped surface.

522. The bone screw locking element of claim 518 in which said member has at least one projection extending from said head.

523. The bone screw locking element of claim 509 in which said head has at least one removed segment.

524. The bone screw locking element of claim 509 in which said head has at least two removed segments.

525. The bone screw locking element of claim 509 in which said head has at least three removed segments.

526. The bone screw locking element of claim 509 in which said head has at least four removed segments.

527. A locking element for use in association with an anterior plating system comprising a member having a head, said head having a width and at least a portion of the bottom surface of said head being non uniform.

528. The locking element of claim 527 in which the bottom surface of said member has a camming surface.

529. The locking element of claim 527 in which the bottom surface of said member has a ramped surface.

530. The locking element of claim 529 in which the member is a set screw.

531. The locking element of claim 529 in which the member is a rivet.

532. The locking element of claim 529 in which the member has projections.

533. The locking element of claim 529 in which the member is a screw.

534. The locking element of claim 529 in which the member is a set screw.

535. The locking element of claim 529 in which the member is a rivet.

536. The locking element of claim 529 in which the member has projections.

537. The locking element of claim 529 in which the member is a screw.